



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 10/811,558   | 03/29/2004  | Geun-soo Lee         | 29925/39912         | 1407             |
| 4743   | 7590        | 10/20/2004           | EXAMINER            |                  |
| MARSHALL, GERSTEIN & BORUN LLP<br>6300 SEARS TOWER<br>233 S. WACKER DRIVE<br>CHICAGO, IL 60606 |             |                      | LEE, SIN J          |                  |
|  |             |                      | ART UNIT            | PAPER NUMBER     |
|  |             |                      | 1752                |                  |

DATE MAILED: 10/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                                      |                                |  |
|------------------------------|--------------------------------------|--------------------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b>               | <b>Applicant(s)</b>            |  |
|                              | 10/811,558<br>Examiner<br>Sin J. Lee | LEE ET AL.<br>Art Unit<br>1752 |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) Responsive to communication(s) filed on 29 March 2004.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) Claim(s) 1-17 is/are pending in the application.
  - 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) 7-17 is/are allowed.
- 6) Claim(s) 1-6 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 29 March 2004 is/are: a) accepted or b) objected to by the Examiner.
 

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All    b) Some \* c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | Paper No(s)/Mail Date. _____ .  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>03292004</u> . | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
|   | 6) <input type="checkbox"/> Other: _____.                                   |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Herbst et al (3,297,663).

In Example 9, Herbst synthesizes a vinylphosphonic acid homopolymer.

Although Herbst does not explicitly state the number of repeating units in the polymer nor the molecular weight for the polymer, the vinylphosphonic acid polymer made in Herbst's Example 9 would certainly have a certain number of repeating units and a certain molecular weight, and it is the Examiner's position that the number of repeating units in Herbst's polymer would inherently fall within the broad range of present claim 1 and that the molecular weight of Herbst's polymer would inherently fall within the broad range of present claim 2.

Herbst states (col.3, lines 63-64) that his polymers are valuable *plastics*. Also, according to present specification (pg.3, lines 23-25, pg.4, lines 1-3), a vinylphosphonic acid polymer is an *organic anti-reflective coating* polymer. Therefore, the prior art, which teaches a vinylphosphonic acid polymer which is an organic anti-reflective coating polymer (according to present specification), teaches present organic anti-reflective coating of claims 1 and 2.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 3-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Herbst et al (3,297,663).

In Example 9, Herbst places 100 g of *vinylphosphonic acid* in 200 cc of *ethylacetate* in a four-necked flask provided with a stirrer, thermometer, dropping funnel and inlet pipe for nitrogen. A mixture of 1 g of *azobisisobutyronitrile* in 50 cc. of ethylacetate is then added drop by drop *within 1 hour*, while stirring, heating under reflux and introducing nitrogen. The batch is then kept at reflux temperature for a *further 3 hours*, while stirring. The polymer (*polyvinylphosphonic acid*) is precipitated in the form of a white powder gradually as the polymerization proceed. Herbst teaches (see col.1, lines 40-42) that his vinylphosphonic acid polymer can be polymerized either in vacuum or in the atmosphere of an inert gas. Because the prior art teaches the equivalence of polymerization in vacuum or in the atmosphere of an inert gas (such as nitrogen), it would have been obvious to one of ordinary skill in the art to conduct the polymerization in Herbst's Example 9 under vacuum condition. Although present temperature range of 60-70°C is not disclosed in Herbst's Example 9, such temperature range would have been obvious to one of ordinary skill in the art because it has been held that discovering an optimum value of a result effective variable involves only

routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Therefore, Herbst's teaching would render obvious present inventions of claims 3-6.

***Allowable Subject Matter***

5. Claims 7-17 are allowed. Herbst et al does not teach or suggest the combination of his vinylphosphonic acid polymer and another polymer having present formula III or IV as presently required in claim 7.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sin J. Lee whose telephone number is 571-272-1333. The examiner can normally be reached on Monday-Friday from 9:00 am EST to 5:30 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly, can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*S. J. L.*  
S. Lee  
October 15, 2004

*Sin J. Lee*  
Sin J. Lee  
Patent Examiner  
Technology Center 1700